

PROPOSED LEAKING UST (LUST) CASE CLOSURE

The Arizona Department of Environmental Quality (ADEQ) is considering closure of the following leaking underground storage tank (LUST) cases:

LUST Case File #: 2227.01, .02, .04
Facility ID # 0-003139
Maricopa County

Fleet Support Services
310 E. 6th Street
Mesa Arizona, 85201

This site is located at 310 E. 6th Street in Mesa. The City owns and uses the property for administrative offices, 911 communications, vehicle fleet maintenance, and automotive re-fueling. The City is the UST owner/operator. The City has conducted corrective actions to mitigate the impact of past fuel releases from three separate USTs systems. The historical UST systems included one dedicated to unleaded gasoline, a second system dedicated to leaded gasoline through part of its service use, and a third system dedicated to diesel fuel. The City also used four USTs for storage of non-fuel petroleum products. ADEQ assigned LUST release numbers 2227.01 and 2227.02 to the leaded gasoline UST area, LUST release number 2227.03 to the diesel UST area, LUST release number 2227.04 to the unleaded UST area, and LUST release number 2227.05 to the non-fuel petroleum USTs. ADEQ closed LUST release numbers 2227.03 and 2227.05 in September 2011. The current UST system is vaulted.

All of the UST systems were removed between 1990 and 1992. Soil contamination was found that exceeded applicable regulatory standards during the UST system removals. The first monitoring well (MW-1) was installed in 1992. Both soil and groundwater had volatile organic compound (VOC) contamination that exceeded applicable regulatory standards. Site characterization began in 1993. Soil borings and several monitoring wells were installed. The monitoring wells were installed on and off site to characterize the groundwater contamination. ADEQ approved the *Site Characterization Report* in October 2000. The historic VOCs reported in groundwater with concentrations that exceeded applicable regulatory standards included benzene, toluene, ethylbenzene, toluene, and methyl tert butyl ether (MTBE).

The *Corrective Action Plan* (CAP) was approved in February 2005 and included active remediation by air sparge (AS) and soil vapor extraction (SVE). SVE operation started in December 2007 and ended in April 2015 due to low contaminant mass removal rates. Low contaminant removal rates limits the cost-effectiveness of the system. The CAP also identified monitored natural attenuation as the remedial option for the groundwater. The CAP predated the implementation of R18-12-263.04, so groundwater contamination concentrations had to be below applicable Aquifer Water Quality Standards (AWQS) to obtain LUST closure.

Groundwater data shows that no VOC contamination was ever present in the off-site monitoring wells. All of the off-site monitoring wells were abandoned in June 2014 with the exception of MW-15. The post remediation groundwater data shows that the VOC concentrations have significantly decreased so that only MW-10 shows any VOC (benzene) in concentrations that exceed an applicable regulatory standard.

A site specific risk assessment and detailed file/information search have been completed. Based upon the results of remedial activities and site specific information provided by Environmental Technology, Inc.

(EN TECH), the above-referenced LUST site is eligible for alternative LUST closure under Arizona Revised Statutes (A.R.S.) §49-1005(E). Arizona Administrative Code (A.A.C.) R18-12-263.04 (A) and (B) allows case closure of a LUST site with groundwater contamination above the Aquifer Water Quality Standard (AWQS) or Tier 1 Corrective Action Standards. ADEQ has considered the results of the site specific assessment and the rule specific criteria below:

1. *Threatened or impacted drinking water wells:* EN TECH evaluated registered wells within ¼ mile of the site. ADEQ evaluated registered wells located between ¼ and ½ mile from the site. According to the Arizona Department of Water Resources (ADWR), there are 71 registered wells located within ½ mile of the site. Of the 71 registered wells, 64 wells are registered as monitoring or other (many are remediation wells). There is one exempt well identified as 55-807168 (City of Mesa) which was capped in 1957 and abandoned in 1995. There are six registered non-exempt City of Mesa wells. Two have been abandoned, and replaced with new wells. One well is City of Mesa well #8, and is no longer in regular use due to heavy silting and the age of the well casing according to the City of Mesa. The well is operated monthly for maintenance, and is available as a backup well. A replacement well was installed near the old one. The City of Mesa sampled three nearby production wells (#7, Old #8 and #9) monthly from August 2009 through January 2011. Wells 7 and 9 are located more than ½ mile from the LUST site, cross-gradient and down gradient, respectively. Old well #8 was located less than 500 feet up gradient from the LUST site. VOC results (which included benzene) have mostly been below laboratory reporting limits, with no exceedances of applicable regulatory standards. A review of a water supply well log for the new City of Mesa well #8 located within a 1/4 mile radius of the site indicate that this well is constructed with perforated intervals between 400 feet and 800 bgs within the Middle Alluvial Unit. The monitoring wells at the site are screened in the Upper Alluvial Unit. Deeper boring logs from the site indicated that there is a clay lens that underlies the site at about 220 feet bgs, which may serve as an aquitard between the upper two aquifer units. According to the ADWR *List of Municipal Water Providers Designated as Having an Assured or Adequate Water Supply* dated January 4, 2018, The City of Mesa has DWR 86-002023.0001. This designation means the City of Mesa has an assured 100 year water supply. Any new or replacement well located at or near this site would need to meet the criteria of A.A.C. R12-18-1302 (B) (3). The City of Mesa Public Water System number is #07-095. About 81 percent of the water used by Mesa residents comes from surface water sources: the Salt River Project (Salt and Verde Rivers) and the Central Arizona Project (Colorado River). About 19 percent of Mesa's water comes from 31 deep aquifer wells that can provide 83 million gallons of water per day. The City of Mesa was not sent a Water Provider Questionnaire since this LUST site is owned by the City. Salt River Project was not sent a Water Provider Questionnaire since none of their wells were identified within 1 mile of the LUST site.

2. *Other exposure pathways:* No confirmation soil samples or a shallow soil vapor samples have been collected at the site since the installation of the vaulted UST system, as well as the presence of the underground infrastructure. The infrastructure includes fuel distribution lines, electrical lines, and communications lines. The groundwater data and the low soil vapor concentrations from the SVE system support that any residual contamination will not continue to degrade groundwater quality. There are no sensitive receptors like schools, day care centers, etc. within ¼ mile of the site.

3. *Groundwater plume stability:* The benzene contamination is present in MW-10 at a concentration that exceeds the applicable regulatory standard. The depth to groundwater is 127.01 feet bgs as reported in November 2017. Benzene has not been detected at concentrations exceeding the minimum laboratory reporting limits at down gradient monitor wells indicating the lateral extent of the impacted groundwater is defined and of limited extent. Groundwater elevation and laboratory analytical data for all of the wells

is available between 1992 and November 2017. EN TECH evaluated groundwater data from several monitoring wells using the Mann-Kendall statistical test. The data indicated a negative slope which implies a decreasing trend. A Mann-Kendall statistical test was not useful for MW-10, due to the very large number of non-detect samples in the data set. This data is presented in the *LUST Case Closure Request*. The groundwater plume does not extend beyond the property line and natural attenuation is expected to result in the continued reduction of benzene concentrations with time. Depth specific groundwater samples were collected using a Snap Sampler® from three of the eight monitoring wells (MW-11, MW-13 and MW-14) during the August 2017 groundwater monitoring event. The groundwater samples were analyzed for some combination of VOCs, polyaromatic hydrocarbons (PAHs), tetraethyl lead and 1, 2-dibromoethane (EDB). The depth specific groundwater data was collected in MW-11 at 142 feet, 165 feet and 210 feet. In MW-13 the depths were 138 and 165 feet due to an obstruction at that depth. MW-14 was sampled at 138 feet, 165 feet, and 192 feet. The sampling data collected from all eight monitoring wells using conventional purging and hand bailing, showed no contamination present over applicable regulatory standards, with the majority of the data reported at less than laboratory reporting limits. The depth specific groundwater samples showed MTBE at concentrations below the Tier 1 Corrective Action Standard of 94 micrograms per liter ($\mu\text{g/L}$). The highest benzene concentration was 8.4 $\mu\text{g/L}$ in MW-14 in the 138 foot sample. The benzene concentration decreased to 1.3 $\mu\text{g/L}$ in the 165 foot sample. Benzene was detected below the laboratory reporting limit but above the minimum detection limit in the 192 foot sample. Benzene was not reported above laboratory reporting limits in any of the other depth specific groundwater samples. This data is indicative of a stable groundwater plume. Although the benzene concentration has increased in concentration in MW-10, the concentration is still well below its historical concentrations, and the concentration of 53 $\mu\text{g/L}$ in 2013 when the benzene concentration last exceeded an applicable regulatory standard. The attached benzene plume map is for data collected through August 2017, when the depth specific groundwater sampling was done.

4. *Characterization of the groundwater plume:* Groundwater samples have been collected at the site between 1992 and 2017. The groundwater at the site was characterized in 2006. The dissolved benzene plume had been contained to on site. The dissolved MTBE plume did extend off-site to MW-15 which is located in Fitch Park. MTBE has not been detected in that well since October 1999. No VOC contamination was present over applicable regulatory standards in August 2017. When groundwater sampling was conducted in November 2017, benzene was reported in MW-10 at 6.5 $\mu\text{g/L}$. This was the only exceedance of any applicable regulatory standard. The benzene concentrations in MW-10 have decreased from a maximum of 7,000 $\mu\text{g/L}$ in July 1998. The maximum MTBE concentration in MW-10 was 36,000 in September 1996. The historic VOC concentrations have decreased throughout the site, with only the benzene contamination in MW-10 exceeding an applicable regulatory standard in November 2017.

5. *Natural Attenuation:* EN TECH ran Bioscreen to analyze the biodegradation and transport of dissolved phase benzene, using very conservative assumptions. Using the first order decay rate assumption, the model predicts that the benzene plume will stop expanding within 15 years. During that time, the model predicts that the benzene concentration will exceed the Aquifer Water Quality Standard (AWQS) of 5 $\mu\text{g/L}$ less than 24 feet from MW-14, which was identified as the source well in the model. This was one of the wells with depth specific groundwater data, as discussed previously in *Groundwater Plume Stability*. The instantaneous model indicated that the benzene would immediately be degraded, which is unrealistic. The parameters used in the model are presented in *LUST Case Closure Report*.

6. *Removal or control of the source of contamination:* SVE and AS was used to remove the source of contamination in the soil above and below the water table between 2007 and 2015. The total

contaminant mass removed was 16,364 pounds of VOCs as gasoline range organics, 22.13 pounds of benzene, and 42.6 pounds of MTBE. Approximately 900 cubic yards of soil was excavated of which 200 cubic yards was contaminated with fuel during the removal of the leaded gasoline USTs. The contaminated soil was transported off-site for ex-situ bio treatment. Over-excavation was also conducted during the removal of the unleaded gasoline UST system. All of the UST systems were removed between 1990 and 1992.

7. *Requirements of A.R.S. §49-1005(D) and (E):* The results of the corrective action completed at the site assure protection of public health, welfare and the environment, to the extent practicable, the clean-up activities completed at this site allow for the maximum beneficial use of the site, while being reasonable, necessary and cost effective.

8. *Other information that is pertinent to the LUST case closure approval:* The facility and LUST files were reviewed for information regarding prior cleanup activities, prior site uses and operational history of the UST system prior to removal.

Groundwater information: MW-10

Date	Benzene AWQS is 5 µg/L	MTBE Tier 1 Corrective Action Standard 94 µg/L	Depth to water (Feet)
9/1995	1,500	6,800	150.36
4/1996	4,500	N/A	150.78
9/1996	5,900	36,000	153.27
7/1998	7,000	36,000	141.96
11/1998	1,900	20,000	140.06
1999-2006	No data	No data	Various
8/2007	1,700	9,100	---
9/2008	110	1,500	119.16
9/2009	19/20	670/580	117.51
9/2010	87	840	108.40
9/2011	9.70	180	108.76
9/2012	66	440	130.36
3/2013	53	3,100	130.57
9/2013	<1.0	200	138.31
6/2014	3.80	250	--
12/2014	<0.50	100	143.91
12/2015	<0.50	35	139.91
2/2016	<0.50	<1.0	135.25
5/2016	<1.0	4.3	147.25
9/2016	<1.0	7.8	141.82
11/2016	<1.0	<1.0	132.60
3/2017	<0.50	<1.0	132.39
6/2017	<1.0	1.50	131.97
8/2017	<0.50	<1.0	133.23
11/2017	6.5	54	127.01

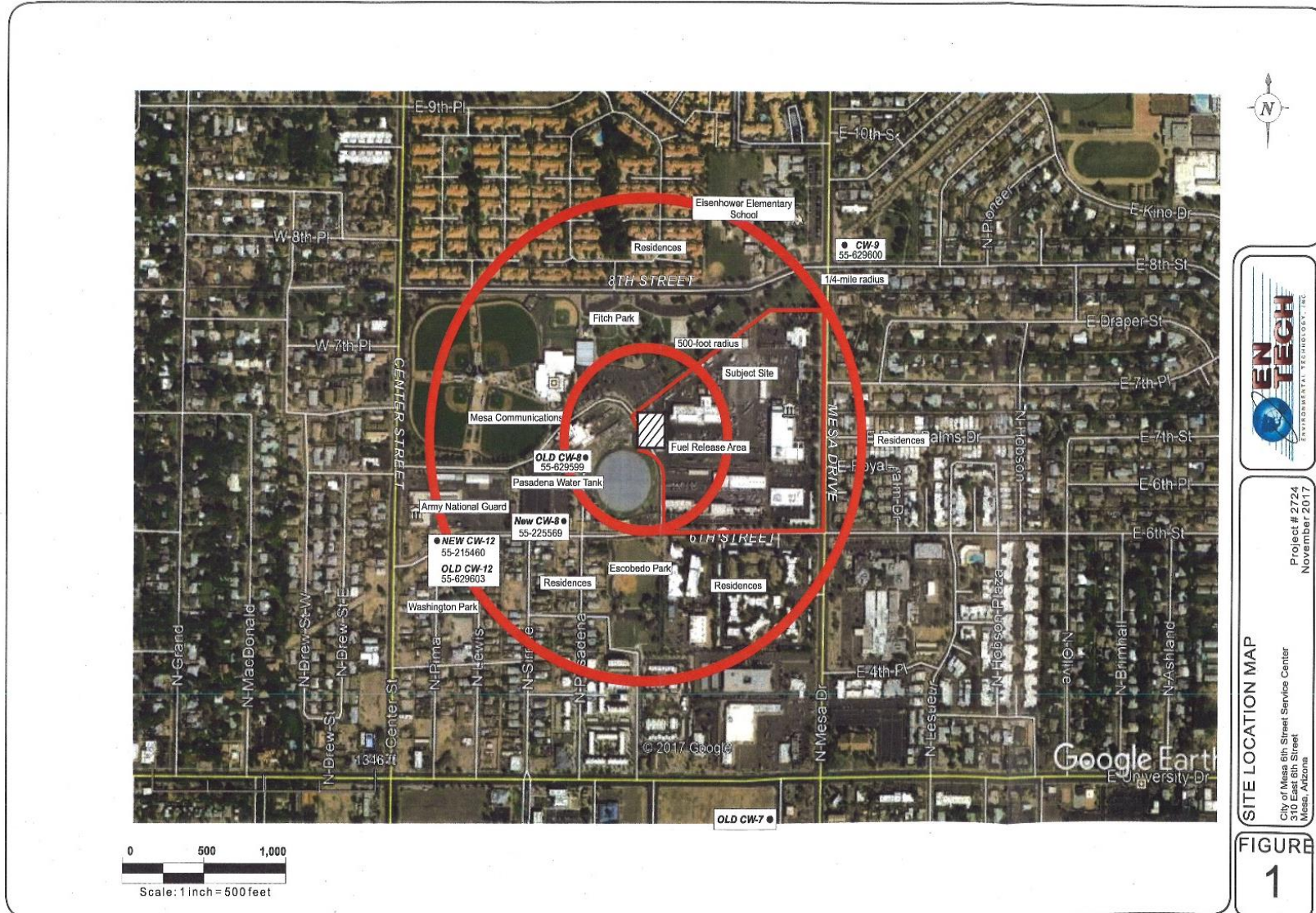
Site specific information concerning this closure is available for review during normal business hours at the ADEQ Records Center <http://www.azdeq.gov/function/assistance/records.html> , 1110 W. Washington St., Suite 140, Phoenix, AZ 85007. ADEQ welcomes comments on the proposed LUST case closure. Please call the Records Center at 602-771-4380 to schedule an appointment. A 30-day public comment period is in effect commencing **May 11, 2018 and ending, June 11, 2018**. Comments should be submitted in writing to the Arizona Department of Environmental Quality, Waste Programs Division, Attention Mark Lucas, and 1110 W. Washington Street, Phoenix, AZ 85007.

If sufficient public interest is demonstrated during the public comment period, ADEQ will announce and hold a public meeting. ADEQ will respond to written comments following the public comment period. For more information on this notice, please contact the Case Manager, Mark Lucas at 602-771-4297 or 800-234-5677 ext. 771-4297 or at mwl@azdeq.gov or the Sr. Risk Assessor, Debi Goodwin at 602-771-4453 or 800-234-5677 ext. 771-4453 or at dgl@azdeq.gov or

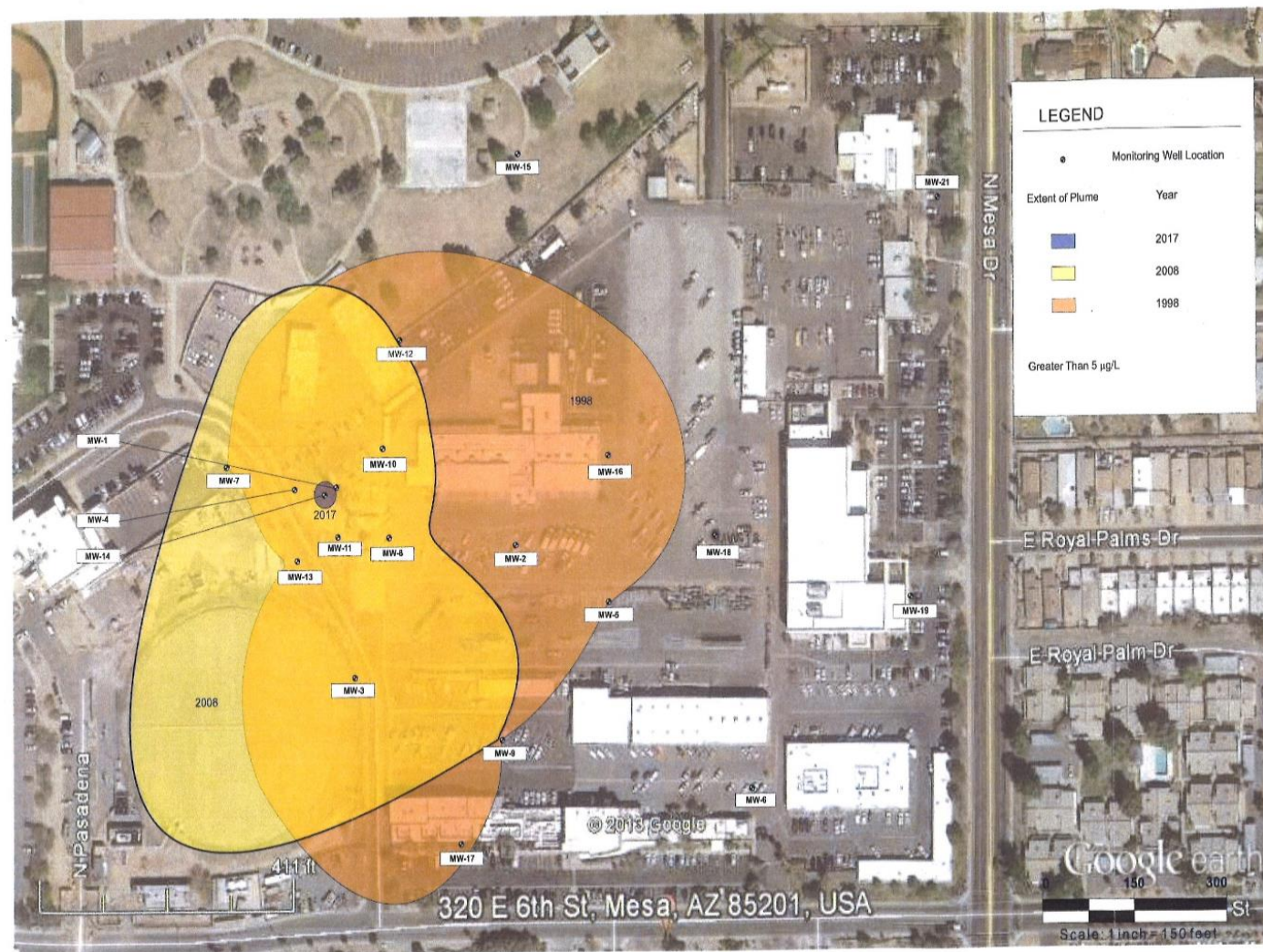
Copies of the cited statutes and rules can be found at:
<http://www.azleg.gov/ArizonaRevisedStatutes.asp?Title=49>, and
http://www.azsos.gov/public_services/Title_18/18-12.html

ADEQ will take reasonable measures to provide access to department services to individuals with limited ability to speak, write, or understand English and/or to those with disabilities. Requests for language interpretation services or for disability accommodations must be made at least 48 hours in advance by contacting: 7-1-1 for TDD; (602) 771-2215 for Disability Accessibility; or Ian Bingham, Title VI Nondiscrimination Coordinator at (602) 771-4322 or idb@azdeq.gov.

ADEQ tomará medidas razonables para proveer acceso a los servicios del departamento para personas con capacidad limitada para hablar, escribir o entender Inglés y / o para las personas con discapacidad. Las solicitudes de servicios de interpretación del lenguaje o de alojamiento de discapacidad deben hacerse por lo menos 48 horas de antelación poniéndose en contacto con Ian Bingham, Title VI Nondiscrimination Coordinator al (602) 771-4322 o idb@azdeq.gov.







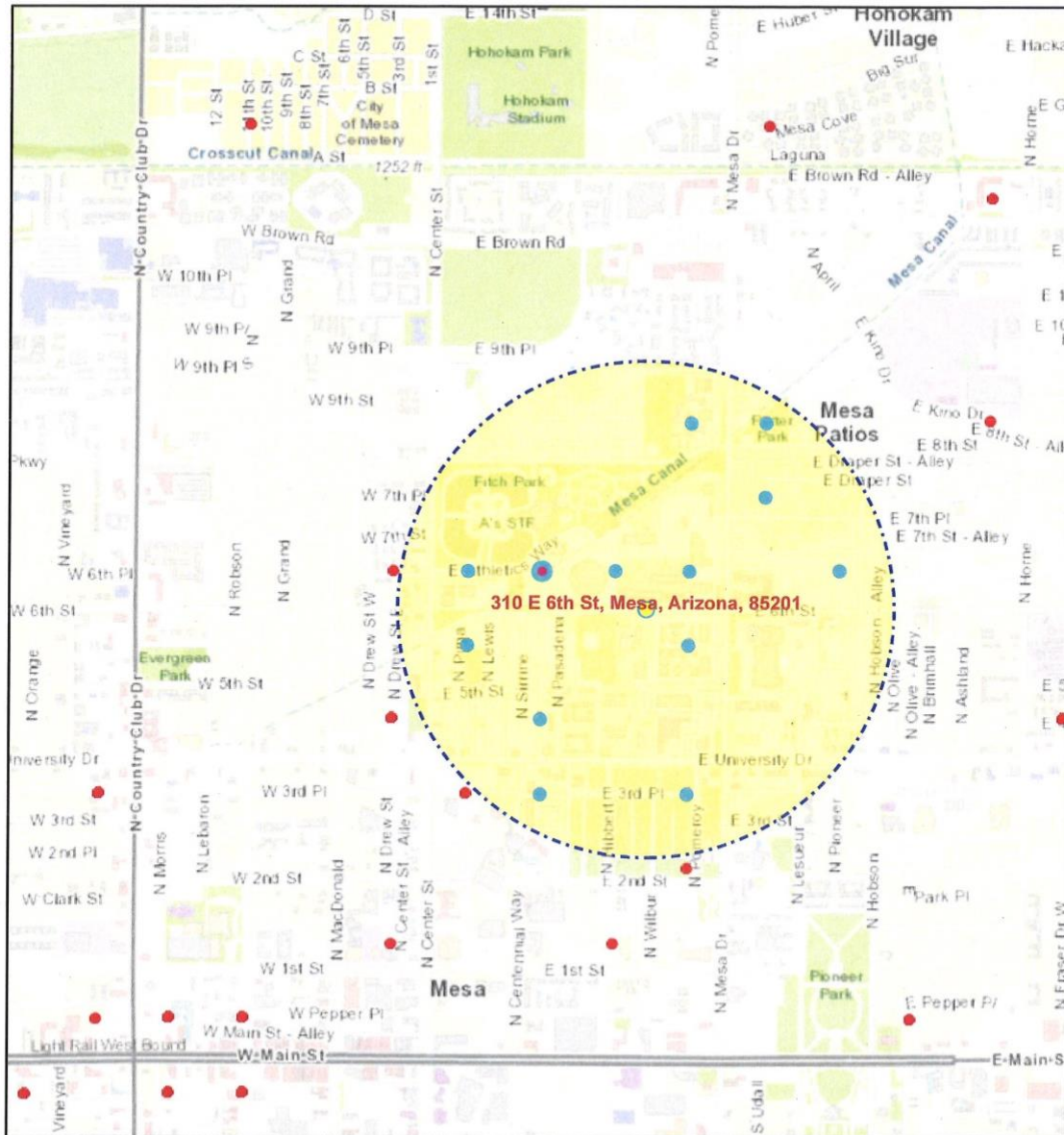
BENZENE PLUME 1998, 2008, 2017

City of Mesa 6th Street Service Center
310 East 6th Street
Mesa, Arizona

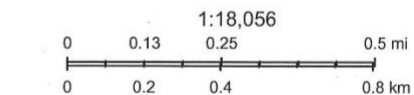
Project # 2724
November 2017

FIGURE
17

City of Mesa Fleet Support Services



May 4, 2018



Arizona Department of Water Resources. Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS

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